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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Rolf STEIGER

Group Art Unit: 1774

Serial No.: 09/336,462

Examiner: M. Grendzynski

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For: RECORDING SHEETS FOR INK JET PRINTING

Commissioner For Patents
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Sir:

This is responsive to the Office Action dated February 20, 2003, in the above-identified application.

Pending claims 1-3, 5, 8-9, 11-19 and 21 stand rejected under 35 U.S.C. 103(a) as obvious over U.S. Patent No. 6,156,419 to Brugger et al. in view of either U.S. Patent No. 5,589,277 to Malhotra ("Maholtra I") or U.S. Patent No. 5,683,793 to Maholtra et al. ("Maholtra II"). Claim 20 stands rejected as being unpatentable over Brugger et al. in view of Maholtra I and II as applied to claims 1-3, 5, 8-9, 11-19 and 21 and in view of U.S. Patent 6,284,339 to Floegel et al. or U.S. Patent 6,153,305 to Uemura et al. or to U.S. Patent 6,156,606 to Kasahara et al. Applicant respectfully disagrees.

The Examiner states that Brugger et al. is directed to a recording sheet for ink jet printing comprised of a substrate and an ink receiving layer. The Examiner also notes that the ink receiving layer of Brugger et al. comprises a binder and a porous inorganic oxide in the form of a colloidal alumina (pseudo-boehmite). The Examiner acknowledges that Brugger et al. does not disclose the use of a hydroxycarboxylic acid, such as lactic acid, in its recording sheets, but points to Maholtra I and II to provide the missing disclosure. More specifically, the Examiner asserts that Maholtra I and II disclose that carboxylic acids such

as lactic acid improve the drying times, optical densities and haze values of images printed on such sheets. Applicant respectfully disagrees.

First, there is no teaching or suggestion in Brugger et al. that its ink receiving layer should be modified to include an aliphatic hydroxycarboxylic acid with more than 2 C atoms as required by the present invention.

Moreover, Maholtra I is directed to recording sheets which exhibit rapid drying times which are comprised of a paper substrate and monomeric amino acids, monomeric hydroxy acids, monomeric polycarboxyl compounds, or mixtures thereof. Among the two columns of compounds listed in Maholtra I as suitable hydroxy acids for the invention is lactic acid. However, unlike Maholtra I, the present invention is directed to recording sheets utilizing an aliphatic hydroxycarboxylic acid with more than 2 C atoms, such as lactic acid, in combination with binders and a porous inorganic oxide. The porous inorganic oxide used in the presently claimed combination is colloidal aluminum oxide, colloidal aluminum/hydroxide or pseudo-bohemite and includes at least one element of the rare earth metal series of the periodic system of elements with atomic numbers 57 to 71. Maholtra I does not teach or suggest this combination of materials, nor does it teach or suggest that such a combination would result in the improved properties of the recording sheets of the present invention, i.e. improved ink absorptiveness, ink absorption rate, waterfastness and light stability.

In fact, a review of the Examples in Maholtra I illustrate that the addition of hydroxycarboxylic acids does not even result in recording sheets with improved optical density as stated by the Examiner. For example, in Example II (column 33), the optical density values of the sheets containing the hydroxycarboxylic acids D,L-threonine and D, L serine when compared with no additive are either decreased, or, illustrate a drastic shift in color

balance resulting in unacceptable prints with huge color shifts. The same is true for D, L threonine and L-tartaric acid in Example IV (column 36). It is respectfully submitted that these Examples make clear, that there would be no motivation to one of ordinary skill in the art to combine the recording sheets taught by Brugger et al. with the hydroxycarboxylic acids of Maholtra I to obtain the improved recording sheets of the present invention.

Maholtra II is directed to transparencies, comprised of a supporting substrate, a first coating layer of super ink absorbent material, and a second ink spreading coating on top of the first coating layer. The ink spreading coating is comprised of a blend of polyvinyl alcohol and hydroxy acids, amino acids or polycarboxylic acids, a dye mordant and a filler (see col. 4, lns. 20-41). In the present invention, the hydroxycarboxylic acids are part of the ink receiving layer and are not added to a separate ink spreading coating as in Maholtra II.

Moreover, the purpose of the hydroxyacids in Maholtra II is to increase the ink spot size, not to render the transparency lightfast or waterfast (see col. 12, lns. 34-40). In fact, Maholtra II indicates that lightfastness and waterfastness agents can be added to the ink spreading layer (see, e.g., col. 12, lns. 40-45, col. 18, lns. 66-67, col. 20, lns. 10-11, col. 21, lns. 9-11 and 35-36). Thus, there would be no motivation to combine the recording sheets of Brugger et al. with the ink spreading hydroxycarboxylic acids of Maholtra et al.

It is well-settled that the mere fact that the prior art could be modified to form the invention would not make that modification obvious unless the prior art suggested the desirability of the modification. In re Laskowski, 10 U.S.P.Q. 2d 1397, 1398 (Fed. Cir. 1989); In re Gordon, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed Cir. 1984).

There is no teaching or suggestion in Brugger et al. that its ink receiving layer should be modified to include an aliphatic

hydroxycarboxylic acid with more than 2 C atoms as required by the present invention.

Accordingly, Applicant respectfully requests Examiner's obviousness rejections to be withdrawn.

Because the present invention is not rendered obvious by the combination of Brugger et al. and Maholtra I or Maholtra II, the rejection of claim 20 based on Brugger et al., Maholtra I and Maholtra II in combination with Floegel et al., Uemura et al. or Kasahara et al. is deemed moot and is believed to be overcome in view of the arguments set forth above.

Applicants submit that this application is now in condition for allowance. No new matter has been added by this Amendment. Reconsideration of this application and allowance of the pending claims are hereby requested, particularly, Claims 1-3, 5, 8-9 and 11-21.

Respectfully submitted,

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